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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/734,122

12/15/2003

Meir Gordon

P-6307-US

4843

49444 7590 04/04/2007
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EXAMINER

MILORD, MARCEAU

ART UNIT

PAPER NUMBER

2618

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/734,122

Applicant(s)

GORDON, MEIR

Examiner

Marceau Milord

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2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-29 is/are allowed.
- 6) ☒ Claim(s) 1-12 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 13-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1- 12, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fullerton et al (US Patent No 6937667 B1) in view of Noori (US Patent No 6760572 B2).

Regarding claims 1-8, Fullerton et al discloses a combiner (figs. 9, 15 and 17) comprising: a circuit comprising three quarter-wavelength differential transmission lines to couple two differential input ports to two differential output ports in a first manner (col. 30, lines 1-31; col. 33, lines 40-58; col. 34, lines 56-67).

However, Fullerton et al does not specifically disclose the features of a quarter-wavelength differential transmission line to couple one of said two differential input ports to one of said two differential output ports in a second, different manner.

On the other hand, Noori, from the same field of endeavor, discloses a four-port branch-line combiner (wherein one input port has a one-quarter wavelength path and a three-quarter

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wavelength path to a common output port), two signal sources of the same frequency and of a fixed equal phase relationship but arbitrary magnitude are fed as equal phase signals through respective counter-rotating circulators to the combiner, wherein the first output port of the combiner is provided with a one-eighth wavelength phase delay to a short or open and the second output port is also terminated in a short or open, so that reflected signals as seen at both input ports return exactly in phase and of equal magnitude to one another (col. 1, lines 44-67). In addition, the third ports of the circulators are each coupled to one of two input ports of a three-port output combiner. The third port is an output coupled to a matching load. The second ports of the circulators are coupled to respective first and second inputs of a four-port combiner. The combiner may comprise a set of quarter-wavelength delay elements coupled together in a ring with ports at the nodes between delay elements. One output port is coupled to a delay element, which provides a one-eighth-wavelength delay (col. 2, line 27- col. 3, line 25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Noori to the communication system of Fullerton in order to provide a signal combining scheme with three port, two input signal combiner which propagates signal from one input terminal to an output terminal without inherent loss.

Regarding claims 9-12, Fullerton et al discloses a combiner (fig. 7;figs. 9, 15 and 17) comprising: a circuit comprising a first group of six reactive elements to couple two differential input ports to two differential output ports in a first manner; a second group of two reactive elements to couple one of said two differential input ports to one of said two differential output ports in a second, different manner (col. 30, lines 1-31;col. 33, lines 40-58; col. 34, lines 56-67).

However, Fullerton et al does not specifically disclose the features of a third group of four reactive elements, each to couple a positive terminal and a negative terminal of a respective one of said two differential input ports and said two differential output ports.

On the other hand, Noori, from the same field of endeavor, discloses a four-port branch-line combiner (wherein one input port has a one-quarter wavelength path and a three-quarter wavelength path to a common output port), two signal sources of the same frequency and of a fixed equal phase relationship but arbitrary magnitude are fed as equal phase signals through respective counter-rotating circulators to the combiner, wherein the first output port of the combiner is provided with a one-eighth wavelength phase delay to a short or open and the second output port is also terminated in a short or open, so that reflected signals as seen at both input ports return exactly in phase and of equal magnitude to one another (col. 1, lines 44-67). In addition, the third ports of the circulators are each coupled to one of two input ports of a three-port output combiner. The third port is an output coupled to a matching load. The second ports of the circulators are coupled to respective first and second inputs of a four-port combiner. The combiner may comprise a set of quarter-wavelength delay elements coupled together in a ring with ports at the nodes between delay elements. One output port is coupled to a delay element, which provides a one-eighth-wavelength delay (col. 2, line 27- col. 3, line 25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Noori to the communication system of Fullerton in order to provide a signal combining scheme with three port, two input signal combiner which propagates signal from one input terminal to an output terminal without inherent loss.

Regarding claims 17-19, Fullerton et al discloses a communication device (fig. 7;figs. 9, 15 and 17) comprising: a dipole antenna; a power amplifier coupled to said dipole antenna; and a combiner coupled to said power amplifier, wherein said combiner includes at least: a circuit comprising three quarter-wavelength differential transmission lines to couple two differential input ports to two differential output ports in a first manner (col. 30, lines 1-31;col. 33, lines 40-58; col. 34, lines 56-67).

However, Fullerton et al does not specifically disclose the features of a quarter-wavelength differential transmission line to couple one of said two differential input ports to one of said two differential output ports in a second, different manner.

On the other hand, Noori, from the same field of endeavor, discloses a four-port branch-line combiner (wherein one input port has a one-quarter wavelength path and a three-quarter wavelength path to a common output port), two signal sources of the same frequency and of a fixed equal phase relationship but arbitrary magnitude are fed as equal phase signals through respective counter-rotating circulators to the combiner, wherein the first output port of the combiner is provided with a one-eighth wavelength phase delay to a short or open and the second output port is also terminated in a short or open, so that reflected signals as seen at both input ports return exactly in phase and of equal magnitude to one another (col. 1, lines 44-67). In addition, the third ports of the circulators are each coupled to one of two input ports of a three-port output combiner. The third port is an output coupled to a matching load. The second ports of the circulators are coupled to respective first and second inputs of a four-port combiner. The combiner may comprise a set of quarter-wavelength delay elements coupled together in a ring with ports at the nodes between delay elements. One output port is coupled to a delay element,

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which provides a one-eighth-wavelength delay (col. 2, line 27- col. 3, line 25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Noori to the communication system of Fullerton in order to provide a signal combining scheme with three port, two input signal combiner which propagates signal from one input terminal to an output terminal without inherent loss.

Allowable Subject Matter

3. Claims 20-29 are allowed.

Allowable Subject Matter

4. Claims 13-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments with respect to claims 1-12, 17-19 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MARCEAU MILORD

Marceau Milord

Primary Examiner

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MARCEAU MILORD
PRIMARY EXAMINER